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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/468,537      | 12/20/1999  | RONALD H MILLER      | 199-0516            | 3755             |

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EXAMINER

JONES, HUGH M

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2123

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
**09/468,537**

Applicant(s)  
**Miller et al.**

Examiner  
**Hugh Jones**

Art Unit  
**2123**



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Dec 20, 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2 6) ☐ Other:

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## DETAILED ACTION

### Introduction

1. Claims 1-24 of U.S. Application 09/468,537, filed 12/20/1999 are pending.

### Information Disclosure Statement

2. The information disclosure statement filed 12/20/1999 fails to fully comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the Miller et al. Reference has not been submitted. Applicants appear to have instead submitted a five page printout from the Fluent™ website, which is not list on the Information Disclosure Statement. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 C(1).

Furthermore, Applicants are requested to provide the following documents:

- Strumolo et al. have published a paper entitled "*New directions in computational aerodynamics*". The paper is listed at the *POWERFLOW*™ website (<http://www.exa.com/newsite/newsevents/inthenews.htm>).

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- Applicants have relied upon the *POWERFLOW*<sup>TM</sup> teachings (line 32, page 6 to line 14, page 7, specification); however, no documentation has been provided. These teachings appear to constitute essential matter.

- Applicants have submitted a document from the Fluent<sup>TM</sup> website. Applicants are requested to supply any Fluent<sup>TM</sup> disclosures.

As these references are not readily available to the Examiner or to the public at large, the applicant should provide the office with copies of the reference in any response to this action as per the provisions of 37 CFR 1.56.

#### **Claim Interpretation**

3. The Examiner interprets that the application of the claimed method/system as applied to engine/valve design merely refers to intended use. The intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

#### **Claim Rejections - 35 USC § 112**

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

**5. Claims 1-24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

- There is insufficient support for Stereolithogram, Nastran, Ansys and POWERFLOW teachings (see pp. 6-7, for example) which are essential to the claimed invention as supported by the specification. Applicants have merely disclosed using these packages without providing substantive detail about the packages or any linkages between the packages. There is insufficient description of how to use the modules with each other. This is reflected in the lack of enabling support for the following claimed limitations:

- accessing and modifying the "template"
- automatically generating meshes;
- automatically simulating the fluid flow;
- automatically terminating the simulation when a steady-state condition is reached;
- the various recitations pertaining to the engine parts.

**6. A reader of the patent would have to re-invent the invention - this constitutes undo experimentation. Furthermore, these software teachings may be updated or deleted in the future. One reading the patent at one time may referred to an effectively different teaching than one who**

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reads the patent at some other time. In any case, it is noted that such references were not incorporated by reference.

**Claim Rejections - 35 USC § 103**

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 148 USPQ 459, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or

unobviousness.

9. **Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of (PowerFlow™ (FLOWNEWS - vol. 4.0, 1998), - PowerFlow™ (“Fluid flow for competitive design”; see [http://www.com.pdf/Exa\\_Brochure 98.pdf](http://www.com.pdf/Exa_Brochure 98.pdf) - 1998, numbered pages 1-11) and Applicants’s Own Admission, *in view of* (Saleh et al. or the taking of Official Notice).**

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- **PowerFlow**<sup>TM</sup> (vol. 4.0, 1998) discloses the use of **PowerFLOW** at **Ford Motor Company**. **Ford Motor Company**, an early user of **PowerFLOW** for external flow aerodynamics and aeroacoustics studies, *has expanded its use of PowerFLOW to include internal flow applications*. Ford's Manufacturing and Vehicle Design Laboratory researches analysis tools that may help them produce advanced-engineered autos in a faster time frame. This department is using **PowerFLOW** to simulate internal flows through critical applications such as paint processes, water cooling jackets and engine transmissions. **PowerFLOW** is helping to optimize the design process as it effectively reduces meshing times to a fraction of what they were previously.

- Applicants admit (page 7, specification) that **POWERFLOW** automatically performs autogridding and simulation.

- **PowerFlow**<sup>TM</sup> ("Fluid flow for competitive design"; see [http://www.com.pdf/Exa\\_Brochure 98.pdf](http://www.com.pdf/Exa_Brochure 98.pdf) - 1998, numbered pages 1-11) disclose: transient and steady state analysis (pp. 3-4); user control over timesteps and measurements (pg. 3); fully automatic grid generation (pp. 4, 6); valve simulation (pg. 6); import templates (pg. 7); engine simulation (pp. 7, 11); interfaces with Nastran and Ansys (pg. 8);

**PowerFlow**<sup>TM</sup> does not expressly disclose automatically terminating the simulation once steady state conditions have been reached in the simulation.

Saleh et al. disclose terminating a simulation once the transient phase of a simulation has been completed and the steady state phase begun. See fig. 9 (# 90) and corresponding text. It

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would have been obvious to one of ordinary skill in the art at the time of the invention to modify the PowerFlow teaching to incorporate the feature of terminating the simulation once steady state conditions have been reached because 1) it is inherent that the simulation must be terminated at some point, 2) no new information would be gained by continuing the simulation and 3) expensive computational assets would be wasted if the simulation were to be continued.

Official notice is taken that it would have been obvious to one of ordinary skill in the art at the time of the invention to terminate the simulation once steady state conditions have been reached because 1) it is inherent that the simulation must be terminated at some point, 2) no new information would be gained by continuing the simulation and 3) expensive computational assets would be wasted if the simulation were to be continued.

**Conclusion**

10. Any inquiry concerning this communication or earlier communications from the examiner should be:

**directed to:**

Dr. Hugh Jones telephone number (703) 305-0023, Monday-Thursday 0830 to 0700 ET, *or* the examiner's supervisor, Kevin Teska, telephone number (703) 305-9704.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, telephone number (703) 305-3900.

**mailed to:**

Commissioner of Patents and Trademarks

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Washington, D.C. 20231

**or faxed to:**

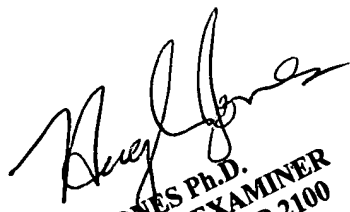
(703) 308-9051 (for formal communications intended for entry) *or*

(703) 308-1396 (for informal or draft communications, please label "*PROPOSED*" or "*DRAFT*").

Dr. Hugh Jones

Primary Patent Examiner

February 5, 2003

  
HUGH JONES Ph.D.  
PRIMARY PATENT EXAMINER  
TECHNOLOGY CENTER 2100